

Process for increasing the stability and/or load carrying capacity of work pieces by means of friction welding

Patent claims

1. Process for increasing the stability and/or load carrying capacity of work pieces at least locally, a first work piece being first produced by means of a conventional manufacturing process characterised in that
  - a. the first work piece is subsequently provided with a hole in the area where the stability and/or load carrying capacity are to be increased and subsequently
  - b. a second work piece consisting of a stability and/or load carrying capacity increasing working material is introduced into the hole and
  - c. in this state, the second work piece is rubbed relative to the first work piece according to the friction welding method until the welding temperature is reached which is below the melting temperature of the two work piece in order to create a friction-welded connection between the two work pieces.
2. Process according to claim 1 characterised in that the hole in the first work piece is a bore and the second work piece exhibits a rotation-symmetrical form, the method of friction welding being in this case that of friction stir welding or friction cone welding.
3. Process according to one or both of claims 1 or 2 characterised in that the hole or the bore in the first work piece is filled at least partly by the second work piece in a connected state.
4. Process according to one or several of claims 1 to 3 characterised in that the first work piece is produced in a casting production process.

5. Process according to one or several of claims 1 to 4 characterised in that at least the first work piece consists of a light metal or a light metal alloy.
6. Process according to one or several of claims 1 to 5 characterised in that the light metal is magnesium or a magnesium alloy.
7. Process according to one or several of claims 1 to 5 characterised in that the light metal is aluminium or an aluminium alloy.